Claims

- A process for production of paper from an aqueous suspension containing 1. cellulosic fibres, and optionally fillers, which comprises adding to the suspension a cationised polysaccharide product comprising a polysaccharide having
- (i) at least one first substituent having an aromatic group; and
 - (ii) at least one second substituent having no aromatic group, forming and draining the suspension on a wire.
 - The process of claim 1, wherein the polysaccharide has a cationic charge density within the range of from 0.05 to 4.0 meq/g.
- The process of claim 1, wherein the first substituent comprises the following 10 general structural formula (I):

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wherein A is a group attaching N to the polysaccharide, R₁ and R₂ are individually H or alkyl having from 1 to 3 carbon atoms, RAr is an aromatic group containing 1 to 12 carbon atoms, or, alternatively, R_1 , R_2 , and R_{Ar} together with N form an aromatic group, and X^{-} is a counterion.

- The process of claim 1, wherein the first substituent comprises a benzyl 4. group.
- The process of claim 1, wherein the second substituent comprises the 25 general structural formula (II):

$$R_{3} \qquad \qquad (I)$$

$$I \qquad X^{\overline{}}$$

$$-B - N^{+} - R_{4}$$

$$I$$

$$R_{non-Ar}$$

wherein B is a group attaching N to the polysaccharide, R₃ and R₄ are individually H or alkyl having from 1 to 3 carbon atoms; R_{non-Ar} is a non-aromatic group containing 1 to 4 carbon atoms; and X is a counterion.

- The process of claim 1, wherein first substituent comprises -CH2-CH(OH)- $CH_2-N^+((CH_3)_2)CH_2C_6H_5$ Cl and the second substituent comprises $-CH_2-CH(OH)-CH_2-CH_3$ $N^{+}((CH_3)_3)C\Gamma$.
- The process of claim 1, wherein the polysaccharide comprises cationised 7. 40 starch, cationised guar gum, or a mixture thereof.

- 8. The process of claim 1, wherein it further comprises adding at least one anionic material to the suspension.
- The process of claim 8, wherein the anionic material comprises silica-based particles or clay of smectite type.
- 10. The process of claim 9, wherein the anionic material comprises silica-based particles having a specific surface area of at least 100 m²/g that are present in a sol having an S value in the range of from 5 to 50%.
- 11. The process of claim 1, wherein the anionic material comprises an anionic organic step-growth polymer.
- 10 12. The process of claim 11, wherein the anionic material comprises an anionic organic step-growth polymer which is a naphthalene sulphonate. .
 - 13. The process of claim 1, wherein the process further comprising recirculating white water and optionally introducing fresh water to form a suspension containing cellulosic fibres, and optional fillers, to be dewatered, the amount of fresh water introduced being less than 30 tonnes per tonne of dry paper produced.
 - 14. The process of claim 1, wherein it further comprises adding to the suspension a cationic polyacrylamide.
 - 15. The process of claim 1, wherein it further comprises adding to the suspension a low molecular weight cationic synthetic organic polymer.

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- 16. A process for production of paper from an aqueous suspension containing cellulosic fibres, and optionally fillers, which comprises adding to the suspension a cationised polysaccharide product comprising
 - (i) a polysaccharide having at least one first substituent having an aromatic group; and
- (ii) a polysaccharide having at least one second substituent having no aromatic group, forming and draining the suspension on a wire.
- 17. The process of claim 16, wherein the first substituent comprises the following general structural formula (I):

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$$R_1$$
 (I)

 $I X^{-}$
 $-A - N^{+} - R_2$
 $I R_{Ar}$

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wherein A is a group attaching N to the polysaccharide, R_1 and R_2 are individually H or alkyl having from 1 to 3 carbon atoms, R_{Ar} is an aromatic group containing 1 to 12 carbon

atoms, or, alternatively, R_1 , R_2 , and R_{Ar} together with N form an aromatic group, and X^- is a counterion.

- 18. The process of claim 16, wherein the first substituent comprises a benzyl group.
- 5 19. The process of claim 16, wherein the second substituent comprises the general structural formula (II):

wherein B is a group attaching N to the polysaccharide, R₃ and R₄ are individually H or alkyl having from 1 to 3 carbon atoms; R_{non-Ar} is a non-aromatic group containing 1 to 4 carbon atoms; and X⁻ is a counterion.

- 20. The process of claim 16, wherein first substituent comprises $-CH_2-CH(OH)-CH_2-N^+((CH_3)_2)CH_2C_6H_5$ Cl⁻ and the second substituent comprises $-CH_2-CH(OH)-CH_2-N^+((CH_3)_3)$ Cl⁻.
- 20 21. The process of claim 16, wherein the polysaccharide comprises cationised starch, cationised guar gum, or a mixture thereof.
 - 22. The process of claim 16, wherein it further comprises adding at least one anionic material to the suspension.
- 23. The process of claim 22, wherein the anionic material comprises silica-25 based particles or clay of smectite type.
 - 24. The process of claim 23, wherein the anionic material comprises silicabased particles having a specific surface area of at least 100 m²/g that are present in a sol having an S value in the range of from 5 to 50%.
- 25. The process of claim 16, wherein the anionic material comprises an anionic 30 organic step-growth polymer.
 - 26. The process of claim 25, wherein the anionic material comprises an anionic organic step-growth polymer which is a naphthalene sulphonate.
 - 27. The process of claim 16, wherein the polysaccharides are separately added to the suspension.
- 35 28. The process of claim 16, wherein the polysaccharides are added simultaneously to the suspension.
 - 29. The process of claim 16, wherein it further comprises adding to the suspension a cationic polyacrylamide.

30. The process of claim 16, wherein it further comprises adding to the suspension a low molecular weight cationic synthetic organic polymer.